

What is Claimed is

1. A graph display processing device for displaying data with periodicity in an output region, comprising:

5 cycle determination means for sequentially receiving data with periodicity to determine an object cycle based on the periodicity of the data; and

display control means for determining, based on data for the object cycle, whether or not data included in the cycle is displayed
10 appropriately as a graph in the output region, and when it is determined that the data included in the cycle is not displayed appropriately as a graph in the output region, correcting a display position of a graph of the data in the output region such that the data included in the cycle is displayed appropriately as a graph in the
15 output region.

2. A graph display control device for displaying data with periodicity in an output region, comprising:

display control means for determining, based on data for an
20 object cycle based on the periodicity of the data, whether or not data included in the cycle is displayed appropriately as a graph in the output region, and when it is determined that the data included in the cycle is not displayed appropriately as a graph in the output region, correcting a display position of a graph of the data in the output region
25 such that the data included in the cycle is displayed appropriately as a graph in the output region.

3. A computer-readable program for causing a computer to function as a graph display processing device for displaying data with periodicity in an output region, comprising the steps of:

5 sequentially receiving data with periodicity to determine an object cycle based on the periodicity of the data; and

determining, based on data for the object cycle, whether or not data included in the cycle is displayed appropriately as a graph in the output region, and when it is determined that the data included in the cycle is not displayed appropriately as a graph in the output region,
10 correcting a display position of a graph of the data in the output region such that the data included in the cycle is displayed appropriately as a graph in the output region.

4. A computer-readable program for causing a computer to function
15 as a graph display control device for displaying data with periodicity in an output region, comprising the steps of:

determining, based on data for an object cycle based on the periodicity of the data, whether or not data included in the cycle is displayed appropriately as a graph in the output region, and when it is
20 determined that the data included in the cycle is not displayed appropriately as a graph in the output region, correcting a display position of a graph of the data in the output region such that the data included in the cycle is displayed appropriately as a graph in the output region.

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5. The graph display processing device or the graph display control device, or the program, according to any one of Claims 1 through 4,

wherein

the display control means, or the process of correcting a display position of a graph, is characterized by:

for given data recorded in a first recording region for allowing
5 the data to be recorded therein so as to be displayed as a graph in the output region, and a second recording region for allowing the data to be recorded therein so as to be displayed as a graph in the output region,

when it is determined that the data included in the cycle is
10 displayed appropriately as a graph in the output region, outputting the data recorded in the first recording region to the output region; and

when it is determined that the data included in the cycle is not displayed appropriately as a graph in the output region, correcting contents recorded in the second recording region such that the data
15 included in the cycle is displayed appropriately as a graph in the output region, and duplicating the contents recorded in the second recording region to the first recording region, and

outputting the contents duplicated to the first recording region to the output region.

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6. The graph display processing device or the graph display control device, or the program, according to any one of Claims 1 through 5, wherein

the display control means, or the process of correcting a display
25 position of a graph, is characterized by:

when the cycle determination means, or the process of determining an object cycle, fails to determine an object cycle, not

correcting a display position of a graph of the data in the output region.

7. The graph display processing device or the graph display control-
5 device, or the program, according to any one of Claims 1 through 6,
wherein

the cycle determination means, or the process of determining
an object cycle, is characterized by:

determining an object cycle based on a characteristic of the
10 data, and

the display control means, or the process of correcting a display
position of a graph, is characterized by:

when it is determined that the data included in the cycle is not
displayed appropriately as a graph in the output region, changing the
15 display position of the graph in the output region in a direction of
variation components of the data with periodicity such that the data
included in the cycle is displayed appropriately as a graph in the
output region.

20 8. The graph display processing device or the graph display control
device, or the program, according to any one of Claims 1 through 7,
wherein

the characteristic includes central portion data relating to a
central portion in a cycle, and

25 the display control means, or the means for correcting a display
position of a graph, is characterized by:

determining, based on the central portion data, whether or not

the central portion in the cycle is positioned in a central region in the output region, to determine whether or not data included in the cycle is displayed appropriately as a graph in the output region, and when it is determined that the data included in the cycle is not displayed
5 appropriately as a graph in the output region, changing the display position of the graph in the output region in a direction of variation components of the data with periodicity such that the central portion in the cycle is positioned in the central region.

10 9. The graph display processing device or the graph display control device, or the program, according to Claim 7 or Claim 8, wherein
the characteristic is calculated based on a local maximum or a local minimum in the object cycle.

15 10. The graph display processing device or the program according to any one of Claims 7 through 9, wherein
the data includes electrocardiogram measurement data, and
the characteristic is calculated based on any of a P-wave height (P potential), a Q-wave height (Q potential), an R-wave height (R
20 potential), an S-wave height (S potential), or a T-wave height (T potential) of an electrocardiographic waveform.

11. The graph display processing device or the program according to any one of Claim 10, wherein
25 the data relating to the central portion in the cycle includes data relating to a position dividing a segment between the R-wave height and the S-wave height at a ratio of 1:2.

12. The graph display processing device or the graph display control device, or the program, according to any one of Claims 1 through 6, wherein

5 the cycle determination means, or the process of determining an object cycle, is characterized by:

determining an object cycle based on a characteristic of the data, and

10 the display control means, or the process of correcting a display position of a graph, is characterized by:

when it is determined that the data included in the cycle is not displayed appropriately as a graph in the output region, changing a display magnification in a direction of the variation components in the output region such that the data included in the cycle is displayed
15 appropriately as a graph in the output region.

13. The graph display processing device or the graph display control device, or the program, according to any one of Claim 12, wherein

20 the characteristic includes amplitude data relating to an amplitude in a cycle, and

the display control means, or the process of correcting a display position of a graph, is characterized by:

determining, based on the amplitude data, whether or not a magnitude of the amplitude in the cycle fits a predetermined
25 amplitude criterion, and when it is determined that the magnitude of the amplitude does not fit the amplitude criterion, changing a display magnification in the direction of the variation components in the

output region.

14. The graph display processing device or the graph display control device, or the program, according to Claim 12 or Claim 13, wherein

5 the characteristic is calculated based on a local maximum or a local minimum in the object cycle.

15. The graph display processing device or the graph display control device, or the program, according to any one of Claims 12 through 14,

10 wherein

 the data includes electrocardiogram measurement data, and

 the characteristic is calculated based on any of a P-wave height (P potential), a Q-wave height (Q potential), an R-wave height (R potential), an S-wave height (S potential), or a T-wave height (T
15 potential) of an electrocardiographic waveform.

16. The graph display processing device or the graph display control device, or the program, according to any one of Claims 12 through 15, wherein

20 the display control means, or the process of correcting a display position of a graph, is characterized by:

 determining whether or not the magnitude of the amplitude based on a value relating to an average of the amplitude data in a plurality of the cycles fits the predetermined amplitude criterion.

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17. The graph display processing device or the graph display control device, or the program, according to any one of Claims 12 through 16,

wherein

the display control means, or the process of correcting a display position of a graph, is characterized by:

when the amplitude data exceeds an upper amplitude criterion,
5 changing the display magnification to double, or when the amplitude data falls short of a lower amplitude criterion, changing the display magnification to half.

18. The graph display processing device or the graph display control
10 device, or the program, according to any one of Claims 7 through 11, wherein

the display control means, or the process of correcting a display position of a graph, is further characterized by:

when it is determined that the data included in the cycle is not
15 displayed appropriately as a graph in the output region, changing a display magnification in a direction of the variation components in the output region such that the data included in the cycle is displayed appropriately as a graph in the output region.

20 19. The graph display processing device or the graph display control device according to any one of Claims 1 through 18, further comprising:

a recording region for allowing the data to be recorded therein so as to be displayed as a graph in the output region, wherein

25 the recording region allows the data to be recorded therein so as to be dividable at least for each object cycle determined by the cycle determination means.

20. The graph display processing device or the graph display control device, or the program, according to any one of Claims 1 through 19, wherein

5 the display control means, or the process of correcting a display position of a graph, is further characterized by:

 based on the determination of the object cycle, presenting in the output region a recognition mark which allows recognition of the object cycle of the graph, in correlation with the cycle.

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21. A graph display processing device for displaying data with periodicity in an output region, wherein

 a CPU of the graph display processing device is characterized by:

15 sequentially receiving data with periodicity to determine an object cycle based on the periodicity of the data; and

 determining, based on data for the object cycle, whether or not data included in the cycle is displayed appropriately as a graph in the output region, and when it is determined that the data included in the
20 cycle is not displayed appropriately as a graph in the output region, correcting a display position of a graph of the data in the output region such that the data included in the cycle is displayed appropriately as a graph in the output region.

25 22. A graph display control device for displaying data with periodicity in an output region, wherein

 a CPU of the graph display control device is characterized by:

determining, based on data for an object cycle based on the periodicity of the data, whether or not data included in the cycle is displayed appropriately as a graph in the output region, and when it is determined that the data included in the cycle is not displayed
5 appropriately as a graph in the output region, correcting a display position of a graph of the data in the output region such that the data included in the cycle is displayed appropriately as a graph in the output region.

10 23. A graphical representation that represents a graph based on data with periodicity, wherein

the graphical representation represents a graph based on the data in an output region, and

a position of the graph as a display object in the output region
15 is corrected for each cycle of the data such that a central portion of the graph in the cycle is positioned in a central region in the output region.

20 24. A graph display method for displaying data with periodicity in an output region, comprising the steps of:

sequentially receiving data with periodicity to determine an object cycle based on the periodicity of the data; and

determining, based on data for the object cycle, whether or not data included in the cycle is displayed appropriately as a graph in the
25 output region, and when it is determined that the data included in the cycle is not displayed appropriately as a graph in the output region, correcting a display position of a graph of the data in the output region

such that the data included in the cycle is displayed appropriately as a graph in the output region.

25. A graph display method for displaying data with periodicity in an
5 output region, comprising the steps of:

sequentially receiving data with periodicity to determine an object cycle of the data based on a characteristic of the data; and

determining, based on data for the object cycle, whether or not data included in the cycle is displayed appropriately as a graph in the
10 output region, and when it is determined that the data included in the cycle is not displayed appropriately as a graph in the output region, changing a display position of the graph in the output region in a direction of variation components of the data with periodicity such that the data included in the cycle is displayed appropriately as a
15 graph in the output region.

26. A graph display method for displaying data with periodicity in an output region, comprising the steps of:

sequentially receiving data with periodicity to determine an
20 object cycle of the data based on a characteristic of the data; and

determining, based on data for the object cycle, whether or not data included in the cycle is displayed appropriately as a graph in the output region, and when it is determined that the data included in the cycle is not displayed appropriately as a graph in the output region,
25 changing a display magnification in a direction of the variation components in the output region such that the data included in the cycle is displayed appropriately as a graph in the output region.

27. A graph display method for outputting data with periodicity to an output region, comprising the steps of:

for given data recorded in a first recording region for allowing
5 the data to be recorded therein so as to be displayed as a graph in the output region, and data recorded in a second recording region for allowing the data to be recorded therein so as to be displayed as a graph in the output region,

when it is determined that the data included in the cycle is
10 displayed appropriately as a graph in the output region, outputting the data recorded in the first recording region to the output region; and

when it is determined that the data included in the cycle is not displayed appropriately as a graph in the output region, correcting contents recorded in the second recording region such that the data
15 included in the cycle is displayed appropriately as a graph in the output region, and duplicating the contents recorded in the second recording region to the first recording region, and

outputting the contents duplicated to the first recording region to the output region.

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28. A graph display method for displaying data in an output region, comprising the steps of:

sequentially receiving data, determining whether or not data for a predetermined interval is displayed appropriately as a graph in
25 the output region, and when it is determined that the data is not displayed appropriately as a graph in the output region, correcting the output region such that the data is displayed appropriately as a graph

in the output region.

29. An electrocardiogram display method for displaying an electrocardiogram in an output region based on electrocardiogram measurement data, comprising the steps of:

receiving electrocardiogram measurement data including noise which affects a display position of an electrocardiogram;

displaying an electrocardiogram in the output region based on the electrocardiogram measurement data;

determining a cardiac cycle of the electrocardiogram as a display object;

determining, based on data on the cardiac cycle, whether or not an electrocardiogram included in the cardiac cycle is displayed in the output region; and

when it is determined that the electrocardiogram included in the cardiac cycle is not displayed in the output region due to a presence of the noise, scrolling the electrocardiogram for the cardiac cycle in the output region in a direction of cardiac electric potential variation components such that the cardiac cycle is displayed in the output region.

30. An electrocardiogram display method for displaying an electrocardiogram while performing a display position correction process such that a cardiac cycle of an electrocardiogram based on electrocardiogram measurement data is displayed in an output region, comprising the steps of:

receiving electrocardiogram measurement data;

determining a cardiac cycle of an electrocardiogram based on the electrocardiogram measurement data; and

performing a display position correction process such that an electrocardiogram included in the cardiac cycle is displayed in the
5 output region, in correlation, in terms of timing, with the process of determining a cardiac cycle.